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Conference Abstract

# Contribution of Citizen Science to Biodiversity Data Mobilization in Russia

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## Abstract

Currently Russia doesn't have a national biodiversity information system, and is still not a GBIF (Global Biodiversity Information Facility) member. Nevertheless, GBIF is the largest source of biodiversity data for Russia. As of August 2020, >5M species occurrences were available through the GBIF portal, of which 54% were published by Russian organisations. There are 107 institutions from Russia that have become GBIF publishers and 357 datasets have been published.

The important trend of data mobilization in Russia is driven by the considerable contribution of citizen science. The most popular platform is iNaturalist. This year, the related GBIF dataset (Ueda 2020) became the largest one for Russia (793,049 species occurrences as of 2020-08-11).

The first observation for Russia was posted in 2011, but iNaturalist started becoming popular in 2017. That year, 88 observers added >4500 observations that represented 1390 new species for Russia, 7- and 2-fold more respectively, than for the previous 6 years. Now we have nearly 12,000 observers, about 15,000 observed species and >1M research-grade observations.

The ratio of observations for Tracheophyta, Chordata, and Arthropoda in Russia is different compared to the global scale. There are almost an equal amount of observations in the

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global iNaturalist GBIF dataset for these groups. At the same time in Russia, vascular plants make up 2/3rds of the observations. That is due to the "Flora of Russia" project, which attracted many professional botanists both as observers and experts. Thanks to their activity, Russia has a high proportion of research-grade observations in iNaturalist, 78% versus 60% globally. Another consequence of wide participation by professional researchers is the high rate of species accumulation. For some taxonomic groups conspicuous species were already revealed. There are about 850 bird species in Russia of which 398 species were observed in 2018, and only 83 new species in 2019. Currently, the number of new species recorded over time is decreasing despite the increase in observers and overall user activity.

Russian iNaturalist observers have shared a lot of archive photos (taken during past years). In 2018, it was nearly 1/4 of the total number of observations and about 3/4 of new species for the year, with similar trends observed during 2019. Usually archive photos are posted from December until April, but the 2020 pandemic lockdown spurred a new wave of archive photo mobilisation in April and May.

There are many iNaturalist projects for protected areas in Russia: 27 for strict nature reserves and national parks, and about 300 for others. About 100,000 observations (7.5% of all Russian observations) from the umbrella project "Protected areas of Russia" represent >34% of the species diversity observed in Russia. For some regions, e.g., Novosibirsk, Nizhniy Novgorod and Vladimir Oblasts, almost all protected areas are covered by iNaturalist projects, and are often their only source of available biodiversity data.

There are also other popular citizen science platforms developed by Russian researchers. The first one is the Russian birdwatching network RU-BIRDS.RU. The related GBIF dataset (Ukolov et al. 2019) is the third largest dataset for Russia (>370,000 species occurrences). Another Russian citizen science system is wildlifemonitoring.ru, which includes thematic resources for different taxonomic groups of vertebrates. This is the crowd-sourced web-GIS maintained by the Siberian Environmental Center NGO in Novosibirsk.

It is noteworthy that iNaturalist activities in Russia are developed more as a social network than as a way to attract volunteers to participate in scientific research. Of 746 citations in the iNaturalist dataset, only 18 articles include co-authors from Russia. iNaturalist data are used for the management of regional red lists (in the Republic of Bashkortostan, Novosibirsk Oblast and others), and as an additional information source for regional inventories. RU-BIRDS data were used in the European Russia Breeding Bird Atlas and the new edition of the European Breeding Bird Atlas.

In Russia, citizen science activities significantly contribute to filling gaps in the global biodiversity map. However, Russian iNaturalist observations available through GBIF originate from the USA. It is not ideal, because the iNaturalist GBIF dataset is growing rapidly, and in the future it will represent more than all other datasets for Russia combined.

In our opinion, iNaturalist data should be repatriated during the process of publishing through GBIF, as it is implemented for the eBird dataset (Levatich and Ligocki 2020).

## Keywords

iNaturalist, RU-BIRDS, GBIF, data publishing, data repatriation

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